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Remarks

Claims 1-85 are pending in the present application, with claims 1-44 being withdrawn. Claims 45-85 have been rejected.

Rejection under 35 U.S.C. § 103 (Obviousness)

Claims 45-48, 52, 53, 55 and 85 were rejected under 35 U.S.C. § 103(a) as being obvious over Sung-Do Chi et al., in view of Apostal D. et al. This rejection is respectfully traversed.

In *ex parte* examination of patent applications, the Patent Office bears the burden of establishing *a prima facie* case of obviousness. MPEP § 2142, p. 2100-127 (8th ed. rev. 5 Sept. 2007). Absent such *a prima facie* case, the applicant is under no obligation to produce evidence of nonobviousness. *Id.* The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007) noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. *Id.* The Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). See also *KSR*, 550 U.S. at ___ . 82 USPQ2d at 1396 (quoting Federal Circuit statement with approval). *Id.*

To support an obviousness rejection, MPEP §2143.03 requires "all words of a claim to be considered" and MPEP § 2141.02 requires consideration of the "[claimed] invention and prior art as a whole." Further, the Board of Patent Appeal and Interferences recently confirmed that a proper, post-KSR obviousness determination still requires the Office make "a searching comparison of the claimed invention — including all its limitations — with the teaching of the prior art." *In re Wada and Murphy*, Appeal 2007-3733, citing *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) and CFMT v. *Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003). In sum it remains well-settled law that an obviousness rejection requires at least a suggestion of *all* the claim elements.

Because the obviousness rejection ignores the following claim elements of claims 45 and

83, the applicant is of the opinion that the obviousness rejection is improper.

Independent claims 45 and 83 include various limitations of a method and a device, respectively, for analyzing the security of an information system, directed to components of the system and to their behaviour and status during a phase simulating potential attacks, based on modelled behavioural rules. In particular, claim 45 recites, *inter alia*, *(i)* "the specification of a set of behavioural rules, from the standpoint of the operation of the system *and from the standpoint of security*" during a modelling phase. It further recites *(ii)* "each component being associated with *at least one state initialized with a sound value*", and *(iii)* "a successful attack causing a state of a component to *pass to an unsound value*" during a simulation phase.

These features are interrelated and allow several advantages. In particular, the claim further recites that each behavioural rule comprises one or more predicates, which may thus take into account the current state of one or more components (see, for instance, description page 15, lines 8-12, and page 19, lines 10-15). According to the claimed invention, the *state* of a component must be construed as defining its status in relation of the security of the system. This interpretation is consistent with the recitation, in the independent claims, of "at least one state initialized with a *sound value*", and of the state of a component being passed to an "*unsound value*" responsive to a successful attack. Further examples of such unsound states of components are given in the description as being: weakened, degraded and dangerous (see Table II, page 14, *ACID states*).

Applicant submits that each of the cited references fail to disclose at least the aforementioned limitations. For example, although the applicant does not contest that Sung-Do Chi el al. discloses network security modelling and simulating, it is submitted that this reference fails to disclose any specification of *a set of behavioural rules* both from the standpoint of the operation of the system and from the standpoint of security, in the meaning of the claimed invention. On the contrary, chapter 3 of Sung-Do Chi el al. teaches that network security simulation systems are organized within a set of layers that characterizes their *design structure*, as shown in Fig. 1 of Sung-Do Chi el al. This layered approach cannot be easily defined, based on the current understanding of the disclosure in this reference. What

is clear, however, is that Sung-Do Chi el al. fails to disclose behavioural rules associated with the components of the system, which each comprise one or more predicates and/or one or more actions as claimed.

The Examiner also refers to various passages of Sung-Do Chi el al. wherein "*states*" are mentioned, whereas this use of the word "*states*" is nowhere comparable to the claimed notion of a security status. For instance, in page 325 of Sung-Do Chi el al. (fifth line from the bottom of page 325), "*state variables*" are defined as being either service type, hardware (H/W) type, or Operating System (O/S) type. Further, in page 327, lines 3-6, reference to "*current states*" in Table 1 must be understood as describing a Unix pre-condition, *i.e.,* a condition for executing the command, like "check the file existence" (see Table 1). Similarly, "*next states*" refer to changed properties after command execution, such as directory attributes, file attributes and permission attributes. None of the features so defined by use of the word "state" in the Sung-Do Chi el al. reference has anything to do with the claimed state of a component within the context of the claimed security modelling and simulation. In particular, they do not relate to a state of a component of a system which can take a "*sound*" or "*unsound*" value.

The same kind of remarks applies to Apostal et al. which, according to the Examiner, would teach the limitation of "each component being associated with at least one state initialized with a sound value". Indeed, there is absolutely no support in Apostal et al., for the Examiner's interpretation that the "state information for all clients" as disclosed in Apostal et al. corresponds to the claimed security status ("state") of each component of the system. According to Apostal et al., the clients are services, that is to say Operating System (OS)/protocol/application program [see, page 217, left-hand column, lines 9-10] executing on specific nodes. The state of any of the services on a node under attack can be changed by one or more effects produced by the service table (see, page 218, left column, 10-12). It is the applicant's view that the possible values of the "state" of a service according to Apostal et al. may be "*installed/uninstalled*" and/or "*active/inactive*". This interpretation is based on the teaching in page 216, right-hand column, lines 7-11 (Configuration table), and in page 221, left column, lines 1-5, of Sung-Do Chi el al. It is consistent with the teaching in Apostal et al., whereas the interpretation by the Examiner seems to result from his analysis by hindsight of the

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reference. However, there is no disclosure or suggestion in Apostal et al. of these states relating to the vulnerability of a device based on the simulated attack.

In addition to the above reasoned statement why the applicant believes the Examiner has erred substantially as to the factual findings, it is submitted that the rejection lack a clear articulation of the reason(s) why the claimed invention would have been obvious. MPEP § 2142, p. 2100-127 (8th ed. rev. 5 Sept. 2007).

The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1395-97 (2007) identified a number of rationales to support a conclusion of obviousness which are consistent with the proper "functional approach" to the determination of obviousness as laid down in *Graham*. The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. MPEP § 2143, p. 2100-128 (8th ed. rev. 5 Sept. 2007).

For the reasons set out above, it is respectfully submitted that the Examiner has not satisfactorily demonstrated that subject-matter recited in the independent claims 45 and 83 is obvious over any combination of prior art references.

The remaining claims have been rejected as obvious over any combination of Sung-Do Chi et al., in view of Apostal D. et al., Rietchey et al., Gupta et al., Dowd, Cohen, Pitchaikani et al. and Swiler et al.. However, these claims are dependent claims that depend directly or indirectly on independent claims 45 or 83. Therefore, they are likewise allowable based on at least the same reasons and based on the recitations contained in each dependent claim.

SUMMARY

In light of the above remarks, Applicant respectfully submits that all of the claims pending in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

If the undersigned attorney has overlooked a teaching in any of the cited references that is relevant to the allowability of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is encouraged to contact the undersigned attorney at (312) 263-4700.

Appl. No. 10/534,855   ` PATENT
Reply to Office Action dated December 5, 2008   Docket No. 28944/40154
Reply to O.A. of September 8, 2008

Reconsideration and allowance of the foregoing claims are respectfully requested.

Deposit Account Authorization

The Commissioner is hereby authorized to charge any deficiency in any amount enclosed or any additional fees which may be required during pendency of this application under 37 CFR 1.16 or 1.17, except issue fees, or credit any overpayment, to Deposit Account No. 50-1903.

Respectfully submitted,

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By:_____

December 5, 2008   J. William Frank, III
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